the Photographist

JOURNAL OF THE WESTERN PHOTOGRAPHIC COLLECTORS ASSOCIATION
AFFILIATED WITH THE UNIVERSITY OF CALIFORNIA MUSEUM OF PHOTOGRAPHY

NUMBER 59 • P.O. BOX 4294 - WHITTIER, CA 90607 • SUMMER 1983

HOW TO MAKE A CAMERA
CYCLOPEDIA
HOW TO MAKE A TRIPOD
HOW TO MAKE BELLOWS
HOW TO LACQUER BRASS
HOW TO REMOVE OLD LACQUER
HOW TO FINISH BRASSWORK
THE "SUN" CAMERA Co. Ltd.
HOW TO BRONZE BLACKEN & CLEANSE BRASS
THE SUN CAMERA COMPANY LIMITED
REGISTERED TRADE MARK
PHOTOGRAPHIC BRASSWORK AND CAMERA FURNITURE
HOW TO MAKE A LANTERN
HOW TO MAKE A HAND-CAMERA
R.W.S. DELL

the Photographist

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FOCUS

THE PITS! That's what it is. Sometimes you just can't win. What's my problem? Well, for some time now I've been complaining (privately, of course) that camera collecting is in the doldrums. No one's finding much of anything. The local antique shops are dry, and my last trip back East produced less and cost more than ever before. When I call my fellow collectors around the country they usually have similar complaints, or they get all excited over the 3-A FPK they "stole" at auction.

Of course, I REALLY don't mind that there's little out there to tempt me, cause right now I'm a candidate for a "save the vanishing species" fund raiser. I'm so "embarrassed" that I don't have two daguerreian tokens to rub together. So what happens . . . ? Some mysterious "force" senses my deflated wallet and the phone begins to ring:

"Hey Mike! Remember that stereo Schwartznoodle you've always lusted after? I'm ready to part with it for only ten thou', cash of course . . ."

"Hey Kessler! Get a lot of dough together; I'm ready to sell my collection of Simon Wing's monogramed underwear . . . "

"Hey Mike! I just located a complete daguerreian studio in downtown Barstow. Wire me $50,000 and we'll flip a coin for the Giroux."

Sob! Suffer! Pain!

Oh, you think I'm making this all up. You think I'm exaggerating just a little. Well . . . maybe, but I swear, two good collections just hit the market back East, and look what pops up at a New York auction, a Tom Thumb in its box; and in Europe, a Scoville Three-book camera! I could just scream! AAAARRGGGHH! ! !

Whew! I feel a lot better after that. Unfortunately, the whole episode so unhinged my mind that I decided to open an antique camera shop. That's right, HA HA HA . . . it's too late to stop me, HE HE HE! I've already done it. It's in the Mercado Capistrano Antiques Mall in downtown San Juan Capistrano. Of course, I don't want an yone to think this is a cheap way to get a free ad or anything; so, remember, DON'T GO THERE!

What's been found lately, you ask? Who cares! Oh, all right . . . How about a very early Schmid detective camera. Then there was that batch of super Folmer & Schwing things from upstate New York; an unusual stereo Graflex, and a stereo Graphic with a stereo Triplex shutter (insert heavy breathing here). Then for all you demented image collectors out there, a Southern California antique show recently coughed up a lovely wall-frame dag of a boy on an elaborate rocking horse.

Me? I'm still savoring the few goodies I brought home from my trip; a huge Kodak advertising wall frame photo of a beautiful girl dressed in ermine, holding a bouquet of holly and a folding Kodak; a large black and gold photographer's sign, and a genuine wicker posing chair with removable arms and back.

Good grief! I just realized . . . this is our Summer issue and it's nearly Fall. The hurrieder I go the behinder I get.

MIKE KESSLER

MUSEUM REPORT

Anyone know a better way for a 10-year-old to celebrate a birthday than with a surprise party? California Museum of Photography supporters couldn't think of one, so they've planned such a party.

This November, the CMP celebrates its Tenth Anniversary. It was on March 11, 1973, that Dr. Robert Bingham and the Board of Directors of the Western Camera Museum decided to transfer a major collection of cameras and photographic equipment to the University of California, Riverside. The collection was moved to the University by the Fall of 1973, with legal title actually transferred over the following two years.

When they realized that ten years had passed, museum supporters wanted a way to appropriately mark the occasion. Well, how about "birthday presents"? A number of major collectors and photographers from around the country promised such donations, but on one condition—the gifts had to stay a secret until the opening of a special exhibition on October 28th. Come by this November to see some of the really choice "surprises".

In conjunction with the Tenth Anniversary Celebration, several major events are scheduled. The Museum and the WPCA are co-sponsoring the Second Western Photohistory Symposium, described in detail elsewhere in this issue of the *Photographist*, on November 11th.

Also, Rock musician Graham Nash will exhibit a number of superb examples from his now-famous photography collection in the CMP's North Gallery. That show runs through November 26 and Nash plans to lecture at the museum in connection with the show.

* * * * * * * *

Not connected to the Tenth Anniversary, but certainly of note, is the 1984 National Conference of the Society of Photographic Education (SPE) scheduled for March 28 through April 1. The event, to be held at the UC Riverside campus, is expected to attract over 1,000 college and university photo instructors, curators, and other scholars. Some events are open to the public; for details, contact the museum.

Two major Spring exhibits are worth special note: From April 13 to May 26 the museum will feature more than 100 original Autochrome plates by Fred Payne Clatworthy. Autochrome, of course, was the first commercially successful color process; Clatworthy's illustrations for *National Geographic* magazine were among the first color photographic reproductions.

Finally, beginning June 1 the museum will attempt a "Daring Experiment" when the entire exibit space is transformed into a children's exploratory center for photography. The Kids' exhibit will let children walk around inside a real camera and will have "frames" for photographs painted right on the wall.

Charles Desmarais, Director
California Museum of Photography

WPCA MONTHLY MEETINGS ARE HELD ON THE 4TH SATURDAY OF THE MONTH AT 7:00 P.M. AT THE WHITTIER COMMUNITY CENTER IN WHITTIER, CA. CALL (213) 693-8421 FOR FURTHER INFORMATION.

ON RESTORATION

It is gratifying to report that the article "A Guide to Antique Camera Restoration", which ran in the last issue, has received a tremendous response. It is apparent from readers comments that there was an unfulfilled need for this type of information. One collector approached me at a recent show and said that the article came at a particularly good time for him; he was restoring an original Kodak and he jsut couldn't get the staples to go through the Naugahyde.

It IS TRUE, however, that other societies have already asked to reprint the article. The standing policy of the WPCA is that all articles published here may be freely reprinted as long as the proper credit is given the author and the Photographist.

One tiny error has been noted in the restoration article that should be corrected here. In the list of materials the X-acto blades should be number 11, not 15.

COVERS

The wonderful piece of art on the front covers comes from an 1894 catalogue of the Sun Camera Co. Ltd., a firm that apparently supplied one with plans and descriptions of how to make various photographic apparatus, then supplied the ready-made brass fittings and even the entire kit. Now you know that when you find a strange looking English camera with no manufacturer's name, this could be the reason. Thank you, Fred Spira, for the loan of your catalogue.

The back cover features a fine old wood engraving of an early Wing camera taken from a recently acquired Wing catalogue belonging to your editor.

BOOKS AVAILABLE

A Century of Cameras - Lothrop (Revised & expanded Edition)	**$17.00**
Catalog of KODAK & BROWNIE Cameras	**$ 8.00**
Catalogue of Premo Camera (a chronology by McKeown)	**$ 9.00**
Cinematographica Register FKI - Ariel	**$65.00**
Collectors Guide to Kodak Cameras (a guide by McKeown)	**$12.00**
CONTAX PHOTOGRAPHY - Reprint (a handbook dealing with the Contax, its cousins and their accessories.)	**$11.00**
McKeown - Price Guide, 2d Ed.	**$ 4.00**
McKeown - Price Guide, 4th Ed.	**$15.00**
Retina Guide - Lahue	**$ 3.00**
The Origins of Photography - Gernsheim	**$45.00**
Umstatter Catalog	**$27.00**
WPCA 1980 Symposium Proceedings	**$11.00**
Wolf Blue Book - Master Edition	**$12.00**
1904 Graphic/Graflex Catalogue (Reprint)	**$ 4.25**
Sheet Music "You Press the Button - We Do the Rest"	**$ 2.50**
Sheet Music "The Kodak Girl"	**$ 2.50**
Marcellus Panoram. . . . $2.50 . . . . or PP in tube	**$ 3.50**

Note: All are available postpaid from WPCA at prices noted.

GRAFLEX PROJECT

The Trustees of the WPCA are pleased to announce a new club activity in keeping with the educational purpose of the association. This program will take the form of supporting basic research in areas needing further study and the publication of the results of that research in book form. Currently under way is a book on the Complete History of Graflex, 1887 - 1973, covering not only a detailed product history, but a company history as well, including the people behind it, the products they created, the contribution these products made to the photographic industry, the role of Graflex as an employer, the innovative employer/employee relationship that existed there, and the significance of the presence of Graflex as a part of the community of Rochester, New York.

Roger Adams is authoring this book and has been working on it for over a year in collaboration with Tim Holden of Rochester, N.Y. Tim was with Graflex for some forty years in various executive capacities and was the "Unofficial Historian" of the company. Even though both Tim and Roger have an extensive amount of material, there is still much research to be done in Rochester to fill in many gaps in the 86-year history of the company. There is a lot of digging and in depth page turning that has to take place at the George Eastman House and the Kodak Patent Museum in addition to continuing interviews with former company employees. Roger hopes to depart for Rochester in the next few months to complete this research.

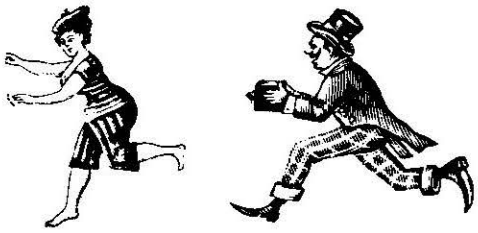
It is the sincere hope of the trustees that this will be only the beginning. Many of us as collectors have taken a particular interest in a very specific aspect of the photographic industry, be it a company, type of product, or era. Over the years we have amassed a great deal of information and knowledge, much of which is unknown and would be of great interest to the photo historical community. We wish to encourage the gathering of this information and to assist in putting it all together and publishing it for the enrichment of all.

Obviously, this will take a great deal of money and we would like to ask for the assistance of one and all in this endeavor. If you would like to contribute, or know of anyone that would like to contribute at any time, please keep in mind that this is fully tax deductible. The contributor can have a nice tax deduction and at the same time be supporting an important effort in the preservation of the history of photography. If you would like to participate in this activity with your knowledge or money gathering expertise, please contact us.

IN MEMORIUM

On July 7th of this year our dear friend and member, Kurt Wachsman, passed away suddenly. He was a gentleman in every sense of the word. His passing is a great loss to all who knew him—both as a friend and for his knowledge of photography and the equipment he loved. The WPCA wishes to offer our sincere sympathy to Edythe and the rest of the family.

UPCOMING SHOWS



SEPT. 24 & 25	The Fall 1983 show held in Burbank for the AMERICAN SOCIETY OF CAMERA COLLECTORS will be a 1½ day affair according to the new plan. Dealers will be able to set up and trade amongst themselves on Saturday night, Sept. 24th. Then there will be additional set-up for Sunday morning. All exhibitors MUST be members of ASCC. Membership runs $12.50 for the calendar year. For more information contact: ASCC, c/o Gene Lester, 4918 Alcove Ave., N. Hollywood, CA 91607 - (213) 769-6160.
OCT. 9	MIDWEST PHOTOGRAPHIC HISTORICAL SOCIETY COLLECTORS SHOW. Ramada Westport, St. Louis, MO. Information available early Sept. from Jerry Smith, 19 Hazelnut Ct., Florissant, MO 63033 - (314) 921-3076
NOV. 6	MICHIGAN PHOTOGRAPHIC HISTORICAL SOCIETY. Ramada Inn, Detroit Metro Airport, I-94 & Merriman Rd. Information - MPHS, Box 202, Wayne, MI 48184, (313) 721-5126 E.B. Wallace.
NOV. 11	2ND WESTERN PHOTOHISTORY SYMPOSIUM,, University of California, Riverside, Large Commons Dining Room. Sponsored by the California Museum of Photography and the WPCA. Write: California Museum of Photography, University of California, Riverside, CA 92521, or phone (714) 787-4787.
NOV. 12 & 13	WESTERN PHOTOGRAPHIC COLLECTORS ASSOCIATION 15th Annual Fall Trade Fair. Pasadena City College, Pasadena, CA. For information write WPCA, PO Box 4294, Whittier, CA 90607 - (213) 693-8421.
JAN. 15	3RD ANNUAL SANTA BARBARA CAMERA SHOW at Earl Warren Show Grounds, 3400 Calle Real, Santa Barbara, CA. Buy, sell or trade all types of photographica. For more information contact Alan Cotter (805) 965-1188 (12 - 5 PM) or Bill McBride (805) 684-7268 eves. Or write to PO Box 6237, Santa Barbara, CA 93160.
JAN. 29	BUENA PARK CAMERA & PHOTOGRAPHICA SHOW, Holiday Inn – Buena Park,. Buy, sell, trade cameras and images of all types at the Fourth Annual Buena Park Camera and Photographica Show. For information contact Robert Barlow, Box 76, Livingston, NJ 07039 or call (201) 994-0294.

THE WESTERN PHOTOGRAPHIC COLLECTORS ASSOCIATION PRESENTS

NOVEMBER 11, 1983

THE SECOND WESTERN PHOTOHISTORY SYMPOSIUM

CMP·WPCA

WHY PHOTOGRAPHY?

ITS PLACE IN OUR CULTURE

- **KEYNOTE ADDRESS**
  Eugene Ostroff, Curator of Photography, Smithsonian Institution
- **PHOTOGRAPHIC ARCHAEOLOGY: A CASE FOR REGIONAL RESEARCH**
  Peter Palmquist, Photographic Historian
- **THE HISTORY OF FRANKE & HEIDECKE**
  Robert Pins
- **THE SLEEPING PHOTOGRAPH**
  Roy Flukinger, Curator, Photography Collection University of Texas
- **THE BOX CAMERA, PHOTOGRAPHY FOR THE MASSES**
  Eaton Lothrop, Historian of Photographic Technology
- **CULTURE AS EXPERIENCE: THE CASE OF THE STEREOGRAPH**
  Edward Earle, Curator, Keystone-Mast Collection, CMP

LOCATION: Campus, U.C. Riverside
Individual admission $15.00. Senior citizens, spouses and students $10.00. Proceedings to be published.

CO-SPONSORED BY THE CALIFORNIA MUSEUM OF PHOTOGRAPHY, U.C.R.

NOVEMBER 12 & 13, 1983

FIFTEENTH ANNUAL

PHOTOGRAPHIC COLLECTABLES DISPLAY AND SALE

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OLD PHOTOGRAPHS
USED EQUIPMENT
SILENT AUCTION
STEREO VIEWS
LITERATURE

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PASADENA, CALIFORNIA

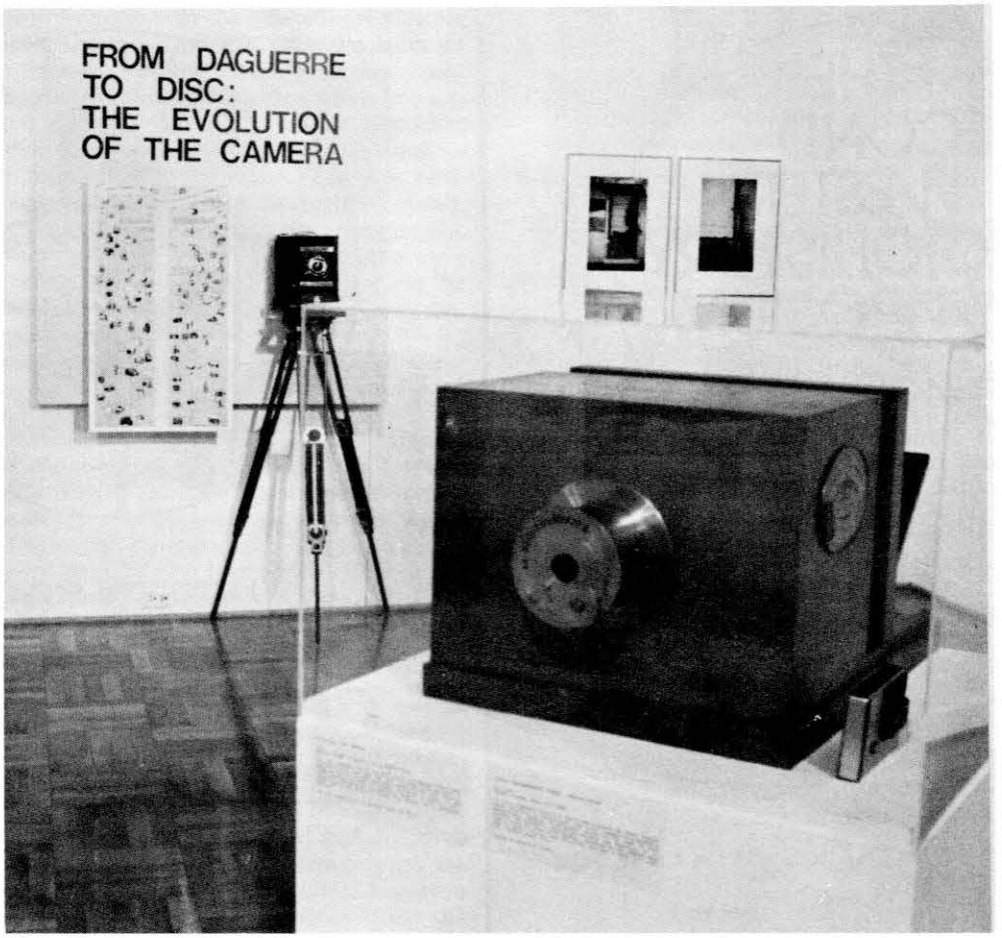
HOURS: 10:30 AM to 5:00 PM EACH DAY
ADMISSION: $2.50 ($2.00 WITH DISCOUNT COUPON AVAILABLE IN PHOTO STORES, SCHOOLS, ETC.). MEMBERS, STUDENTS AND SENIOR CITIZENS: $1:00. CHILDREN UNDER 12 ADMITTED FREE WITH PARENT.

WPCA

FOR INFORMATION ON SYMPOSIUM OR SHOW CONTACT WPCA, P.O. BOX 4294, WHITTIER, CA 90607 OR CALL (213) 693-8421.

BRING YOUR OLD CAMERAS TO SELL OR TRADE

FROM DAGUERRE TO DISC



"While the brief history of photography is, of course, one of a medium used to record and express a vast variety of things, it is also inextricably entwined in a vast maze of technological apparatus. Personal inclinations and artistic conventions may influence a photographer, but it is technology which dictates the final parameters of expression. A myriad of change has occurred during the past 144 years in the mechanical, optical, and chemical relationships which make photography possible; this exhibition and publication attempt to focus on some of the major developments of that technology, their continuance to the present of their fading into obscurity."

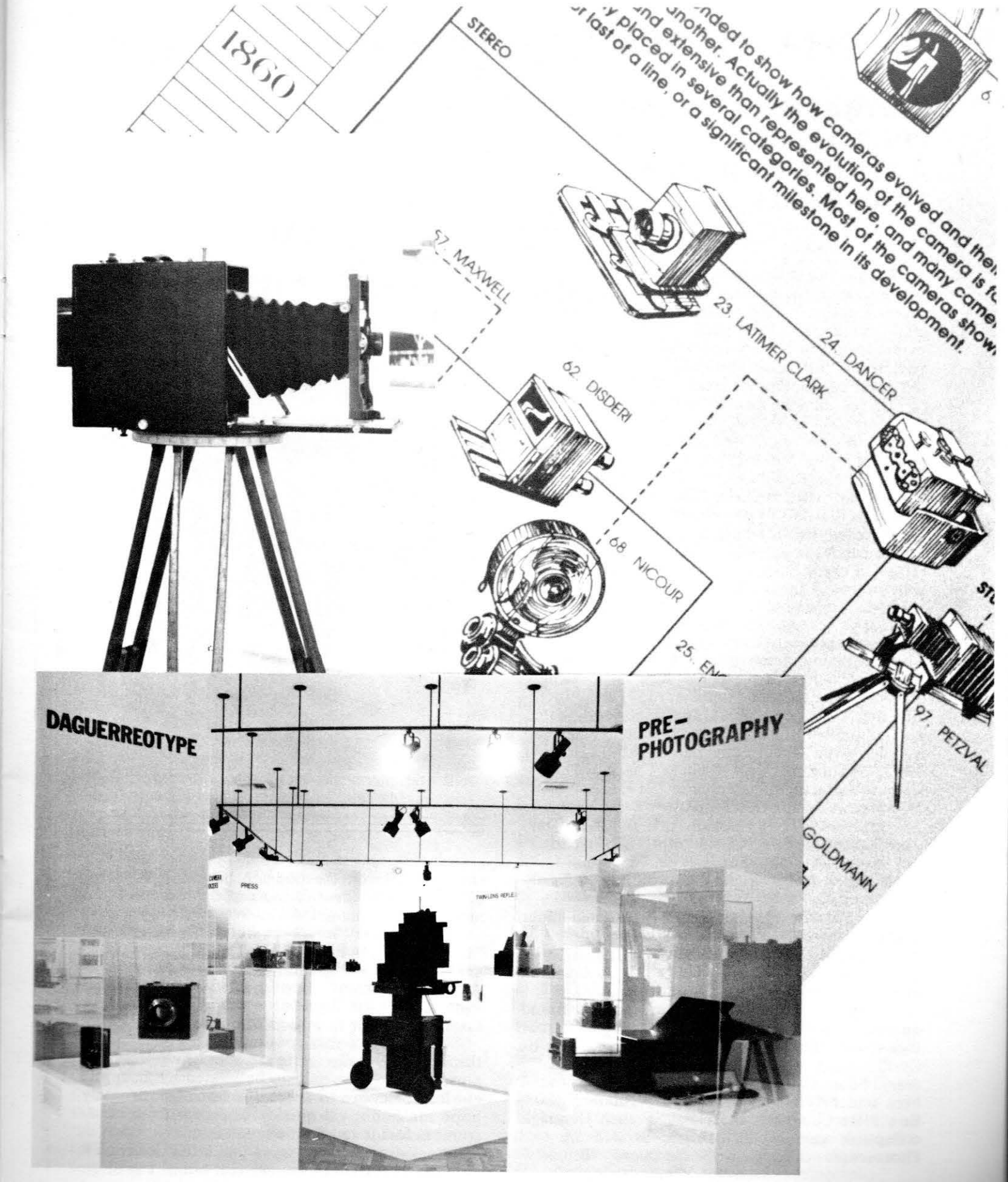
So reads the introduction to the poster accompanying the latest show, "Daguerre to Disc, The Evolution of the Camera", which recently finished a four month run at the California Museum of Photography on the UC Riverside campus. If you saw it you should be aware that it was by far the best display of its kind ever seen on this coast and among the best and most complete antique camera and image displays mounted anywhere. Collectors from all across the country graciously loaned their best pieces, combining with numerous examples from the museum's own expanding collection.

Highlighting the exhibit were two fine cameras in particular, a magnificent replica of the original Giroux daguerreotype camera, flawlessly constructed by Robert K. Combs, and a classic, 9-lens Simon Wing wet-plate studio camera and stand, the latest gift to the museum from the WPCA.

Alas, if you missed it you will just have to be satisfied with these photos, squinting hard to try and make out your favorite camera that's just out of sight.

Okay, so you missed the show; don't miss out completely by failing to send for a copy of the colorful poster which accompanied the Daguerre to Disc exhibition. Measuring 19½" X 35", this frameable wall poster comes two ways: folded flat and cleverly disguised as a CMP bulletin, or rolled in a mailing tube. The evolution of the camera is shown on a time line/family tree through 100 hand-drawn illustrations. The back of the poster contains a detailed but concise description of each camera and is NEARLY error free. For each poster wanted send $5 for folded, or $6 for rolled to:

The California Museum of Photography
University of California
Riverside, California 92521


1860
STEREO
nded to show how cameras evolved and then
another. Actually the evolution of the camera is fo
and extensive than represented here, and many camer
y placed in several categories. Most of the cameras shown
r last of a line, or a significant milestone in its development.
57. MAXWELL
23. LATIMER CLARK
24. DANCER
62. DISDERI
68. NICOUR
25. EN
97. PETZVAL
GOLDMANN
DAGUERREOTYPE
PRE-
PHOTOGRAPHY
PRESS

BOOK REVIEW

THOMAS INTERNATIONAL PHOTO DIRECTORY OF ANTIQUE CAMERAS 1840 - 1940

The preface to this book states that it was "published in response to a need by camera collectors, museum curators, and historians". Unfortunately, it may do far more harm than good.

Its specifications are impressive: detailed information on 3905 camera models, 2348 photographs and illustrations, and it claims to list approximately 80% of all still camera models manufactured between 1840 and 1940. Regardless of how exaggerated this last claim appears to be, the book has one fatal problem; it is so filled with errors as to be nearly useless. In fact, it contains the possibility of doing great harm to the collectors, curators, and historians it claims to be published for.

Whether the mistakes are a result of ignorance or just carelessness, there appears to have been no effort to check facts or consult with readily available sources.

Many cameras are listed under incorrect names, often with incorrect information. In several cases the same camera is listed two, three, or even four times, with completely different data, all incorrect. A classic example is the Wing "New Gem" camera of 1899, listed under numbers 1357, 1359 (actually the "Ajax"); number 1361 (incorrectly dated 1863); number 1362 (incorrectly dated 1865); and number 1363 (incorrectly dated 1880). Number 1358, "Miniature Gem Camera", is dated 1900 when it was actually patented in 1914.

Here are some other "slip-ups":

Number 317; the information is for a "Daydark" street camera but the photo is of an Ingersoll "Sure-Shot" premium camera.

Number 420, "Original Brownie" is obviously a later model.

Number 476, "Comet" incorrectly listed under Kodaks.

Number 176, "Eureka School Outfit" of 1891, and number 199, "Square Bellows View Camera" of 1883, are both the same Anthony camera.

Some of the worst transgressions are found under "Country Unknown" and "Manufacturer Unknown". The Russian "Sport" camera with its Cyrillic letters ("Спорм") can be found in nearly every book listing foreign cameras but is found here under "Country Unknown". Number 3805, Box Plate Camera is the classic French Hermagis collapsible camera. Listed here as well are two Photoscopic cameras with the word "Brussels" clearly visible on the body. A beginning collector could probably identify most of the cameras listed here from their names alone.

The French "Enjalbert Photo Revolver" and "Le Tourist" cameras are listed and illustrated both under French and American cameras, whereas as American cameras they and several others are named for their distributor, James W. Queen & Company, rather than their manufacturer.

The list of errors goes on and on but you get the idea. It is really sad to see a lot of work go into a project like this, only to be wasted by an apparent lack of desire to check the facts. One can only hope the book will quickly disappear from bookstores before it can do too much harm.

MIKE KESSLER

QUESTION: What do Sterno, multiplying cameras, food processors and Utah have in common? And who IS this man? To find out don't miss the next exciting edition of the PHOTOGRAPHIST. At your local mailbox, coming this Fall.

EARLY INVENTORS OF PHOTOGRAPHY

By Jonathan Spira

INTRODUCTION

The invention of photography is variously said to have taken place in 1824 (Nicephore Niepce's Heliography); 1829 (Daguerre discovered the light-sensitivity of iodized silvered plates); or 1839 when Daguerre announced his invention, the Daguerreotype, to the world – the same year Fox Talbot made public his paper process, the Calotype). Yet, investigations which, in one form or another, contributed to the work of Niepce, Daguerre and Fox Talbot date back as far as the time of Aristotle, if we consider the significance of the principle that objects themselves emit the light rays which meet the eye. But it is the work of three eighteenth-century scientists that most directly contributed to the invention of photography as we know it: Johann Heinrich Schulze (1687 - 1744), Giacomo Battista Beccaria (Beccarius) (1716 - 1781) and Carl Wilhelm Scheele (1742 - 1786).

EARLY 'INVENTORS' OF PHOTOGRAPHY

Schulze was appointed professor of medicine in 1720, and of Greek and Arabic in 1729, at the University of Altdorf; he was later called to the University of Halle as professor of medicine, rhetoric and archaeology. Outside of his numerous academic pursuits, Schulze conducted many chemical experiments, attempting to reproduce the luminous stone of Balduin. While still in Altdorf, he once saturated chalk with nitric acid which happened to contain a small amount of silver. Performing his experiment near an open window, he observed that the portion of the precipitate that faced the window had turned purple, whereas that part not facing the window remained in its original state (white).

Schulze was so taken by this unexpected development that he put aside his original experiment and began to investigate the cause of the unusual change he had observed. His first test, using fire to heat the precipitate, proved that the change was not due to heat. He then divided the mixture into two parts, leaving one in the dark and exposing the other to the sunlight. On the bottle exposed to sunlight; Schulze placed a small piece of string around it. After several hours in direct sunlight, Schulze removed the string and found that the precipitate under the string had remained the same color as the precipitate that had not been exposed to any sunlight. Schulze then put the portion of the precipitate that had been kept in the dark into the bottle, and placed a sheet of paper, from which letters and words had been cut out, onto it. "Before long I found that the sun's rays on the side on which they had touched the glass through the apertures in the paper, wrote the words or sentences so accurately and distinctly on the chalk sediment, that many people curious in such matters but ignorant of the nature of the experiment, were led to attribute the result to all kinds of artifices."

Having forgotten that there had been a small amount of silver in the original mixture, Schulze made a new mixture of nitric acid and salt and repeated the experiment. Puzzled by his lack of success, it was some time before he remembered that he had had some silver in the original experiment. Schulze then mixed up a solution with a stronger silver mixture and observed that the discoloration took place more rapidly. He noticed that the sediment was further darkened by the addition of more silver.

Schulze related the details of his discovery to the Imperial Academy in Nurnberg under the title "Scotophorus pro Phosphoto Inventus". It was a sort of paradox that the sun should produce darkness, points out Gernsheim. Schulze had been searching for 'phosphorous', bringer of light, and discovered 'Scotophorous', bringer of darkness.

Schulze related the considerable importance that he attached to his experiments in his post-humously-published "Chemische Versuche". He stresses the signifance of the discovery of the light-sensitivity of carbonate of silver and, even more significantly, the independence of the sunlight's chemical effects from those of heat.

Unfortunately, Schulze did not seek any practical applications for his discovery (Gernsheim, 20). He did not spread the nitrate of silver onto paper, for example, and attempt to produce images by the same process through which he achieved the fixing of letters and sentences onto the solution through a bottle. Thus, his experiments remained by-and-large unnoticed until Eder called attention to them in his 'Geschichte der Photographie' in 1881, in which he names Schulze as the 'inventor of photography'. As Gernsheim points out in 'The Origins of Photography", Eder, is technically speaking, correct if we translate 'photography' literally as 'light-writing', because Schulze had written words and sentences in the solution in the bottle. However, he adds, the term 'photography' was first used in 1839 to denote the "making of permanent pictures" through the action of light. From Schulze does, however, "stem the whole genealogical tree of photochemistry, which, combined with the camera obscura, eventually produced photography".

But is was the investigations of the Italian physicist Beccaria, based on the work of Reaumur and Duhamel, that led him to discover the sensitivity of silver chloride to light. Beccaria, who wrote in Latin and signed his name 'Beccarius', was a member of a religious order, taught rhetoric and philosophy in Rome and Palermo and physics at the University of Turin and was interested almost exclusively in the study of artificial and atmospheric electricity.

Beccarius took freshly precipitated hornsilver, placed it in a bottle and observed that the side facing the light turned blue whereas the opposite side remained whitish. When the whitish side was turned to face the light, it, too, turned blue. This, states Eder, convinced him that it was the effect of the light, not the air as he had previously believed, that caused the change of color.

Eder points out that Beccarius could not have known of the work of Schulze because in his essay of 1757, he does not make mention of his work. The procedures which Beccarius used were similar in nature to those of Schulze; though Schulze employed 'kreidehaltigen Silvermagna', Beccarius experimented with silver chloride. Beccarius states that there is a certain 'force' in light that could change colors of certain objects. He concluded that it is not air, but light that darkens silver chloride and adds that one must have a thorough knowledge of the three causes, light, air and heat, in order to study the change of colors.

Carl Wilhelm Scheele, a renowned Swedish chemist who is responsible for many important discoveries in chemistry, also recognized the reaction of silver chloride to light. Scheele was familiar with Schulze's investigations and based his own work, 'Aeris atque ignis examen chemicum', which is of particular significance to the history of photography, on the posthumously-published work by Schulze. Many writers, such as Landgrebe (Uber das Licht, 1834), Becquerel (La Lumiere, 1868), Hardwich (A Manual of Photographic Chemistry, 1863) and Muspratt (Enzyklopadisches Handbuch der technischen Chemie, 1878), list him as the founder of photochemistry. Eder states that " . . . he is undoubtedly entitled to recognition for his services in carrying out his experiments in a more systematic and clear-sighted manner than his predecessors."

Scheele originated the chemical conception of the reaction of silver chloride to light and the photohistory of the solar spectrum. He used silver chloride paper in his experiments and was familiar with the different reactions of silver chloride. Not only did he observe the difference in behavior of silver chloride blackened by light, but he also wrote of the insolubility of silver chloride in ammonia. This observation was overlooked in the beginning of the nineteenth century by both Wedgwood and Davy, for whom an understanding of its significance, as Gernsheim wrote, might have provided a way to produce a partially-acceptable fixing agent. Gernsheim justifiably feels that photography might have been developed around 1800 had this information been put to use.

Another significant experiment by Scheele is one to which he attached little importance. Powdered silver chloride, exposed to the full spectrum of sunlight, was blackened more easily by the violet of the spectrum than by other rays, showing that violet rays are more chemically active than other rays. (Note: The more pronounced darkening effect of the violet rays proved to be a source of great consternation to early photographers, who were frustrated by the manner in which subjects, affected by these rays, were rendered onto sensitized black-and-white material.) This important discovery came in the course of an experiment in which Scheele was attempting to prove that light itself cannot be considered to be a simple substance or element.

Scheele concluded incorrectly that light was decomposed by the silver chloride by placing silver chloride into a glass through which no light might enter, and exposing it to constant sunlight for a long period of time. The silver chloride did not blacken, although the glass itself became quite hot. Scheele eliminated consideration of the possibility, as did Schulze, that the blackening might be caused by heat, but stated that the light is probably not pure 'phlogiston' but combines along with heat and the 'silver chalk' to effect a blackening. In the English translation of Scheele's work by J.R. Forster, F.R.S., Richard Kirwin, who added some explanatory notes, stated that he doubts that the light consisted of 'phlogiston and fire' and reasoned that 'combustible matter ordinarily does not penetrate solid matter as does light; that, on the other hand, light does not generally reduce metal oxides of manganese dioxide'. Kirwan seemed to believe that the light sprang from a strong motion of the elementary fire, whereby the combustible matter was expelled from the objects which were exposed to light.

Therefore, we can credit the work of Schulze, Baccarius and Scheele as representing the first useful developments which, during the first four decades of the nineteenth century, culminated in the 'perfection' of what became known as 'photography' and which, despite vast improvements to, and countless changes in the manner in which the early scientists' findings are not being utilized, still forms the very basis of modern-day technology.

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IN THE MAILBOX . . . .

Dear Mike:

The purple leather No. 4 Kodak camera was presented to Princess Alexandra of England, the wife of the Prince of Wales (later, Edward VII). She was an enthusiastic photographer, and some of her photographs were shown in the 1897 Eastman Exhibition.

In 1902, as Queen, she granted George Eastman a Royal Warrant as purveyor of photographic materials to the Royal family. In 1908 over 140 of her snapshots were published in "Queen Alexandra's Christmas Gift Book", and hundreds of thousands of copies were sold for charity. According to Brian Coe, the Queen's favorite camera was No. 4 Bulls-Eye Special Kodak camera.

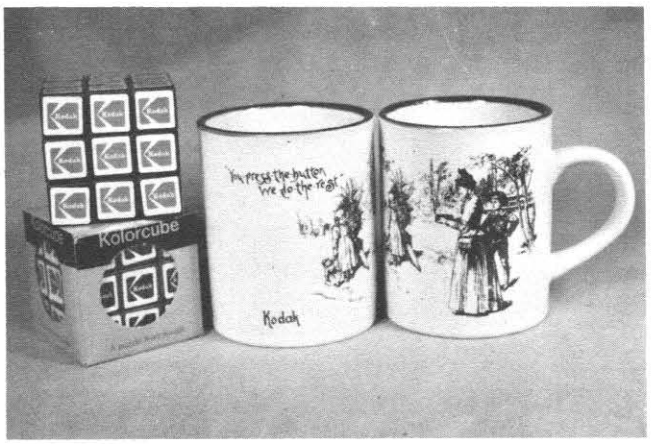
Yours truly,

David A. Gibson
Patent Department Museum
Eastman Kodak Company

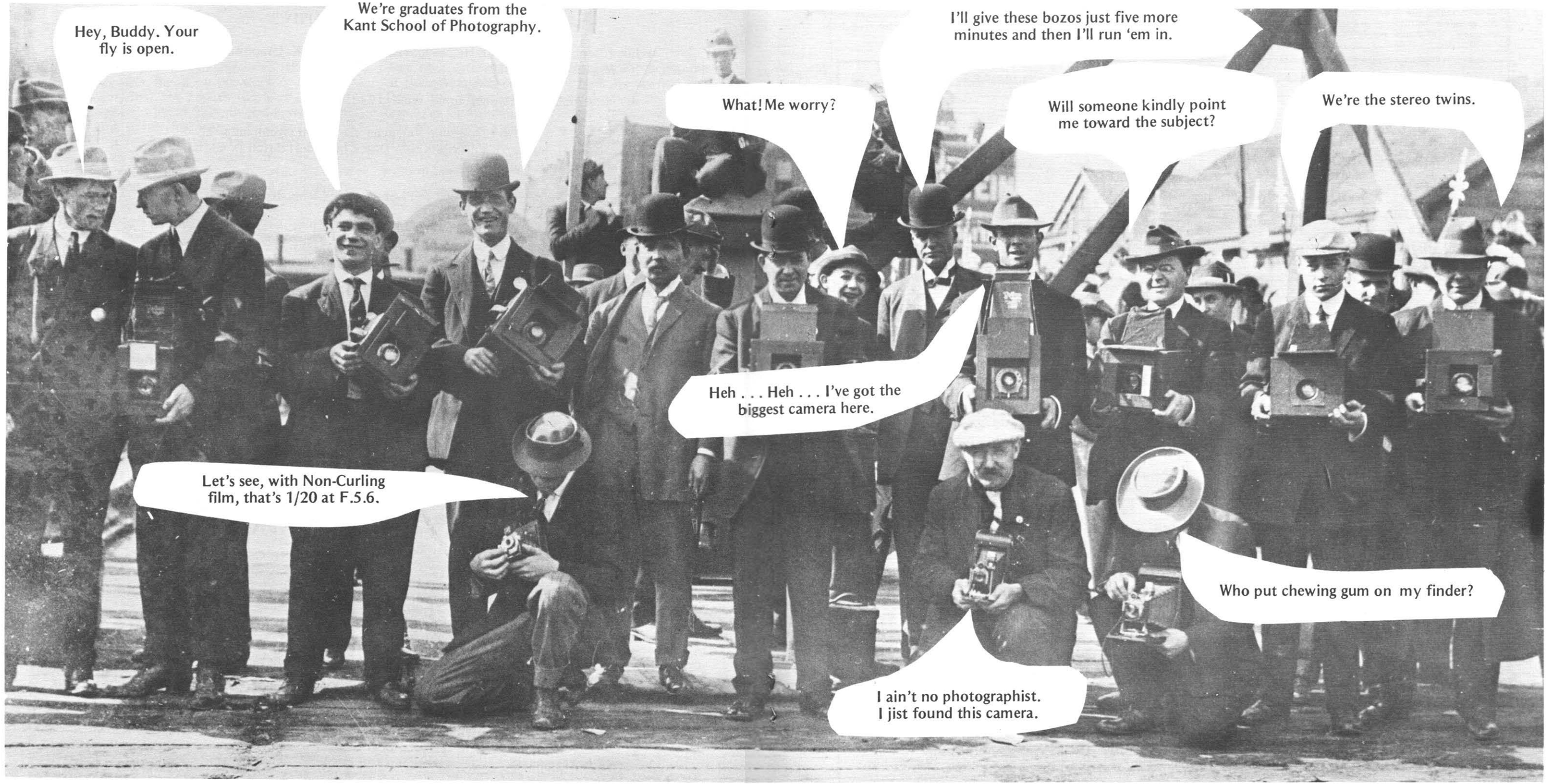
Thanks, Dave, and also, Chris Odgers, for the correction. I've always thought that errors were the best way to learn. No wonder I'm so smart.

MIKE

KODAK MUG & RUBIX CUBE NOW AVAILABLE



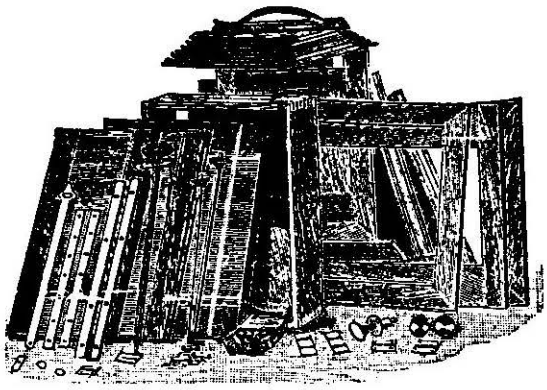
KODAK coffee mug with reproduction of first Kodak advertisement and a KODAK Rubix cube—both items from KODAK-Australia - each $14.50 PP or $28.00 PP for the pair. Available at Show for $12.50 each. Supply limited.


Hey, Buddy. Your fly is open.
We're graduates from the Kant School of Photography.
What! Me worry?
I'll give these bozos just five more minutes and then I'll run 'em in.
Will someone kindly point me toward the subject?
We're the stereo twins.
Heh . . . Heh . . . I've got the biggest camera here.
Let's see, with Non-Curling film, that's 1/20 at F.5.6.
Who put chewing gum on my finder?
I ain't no photographist. I jist found this camera.

If this photograph looks familiar it's because it was used for the cover of issue Number 56 last Fall. Shortly after it was published, Bill and Mary Carroll received a Xerox copy with the added conversations you see above. This work of "art" was left unsigned but I hope whoever did it won't mind if we share it with everyone.

From its pages you could select any hinge, angle plate, milled nut or screw necessary to construct any type of camera. Want to make your own studio stand? How about a complete set of metal parts including the Archimedian screw and rackwork. It contained the complete instructions on how to make a Magic Lantern, Tripod, or camera and would supply you with all necessary parts AND all the tools, burnishers, files, calipers, etc. to do the work. It told you how to lacquer brass and how to make a bellows.

What is it? Just an amazing little catalogue from the Sun Camera Company Ltd., 1894 edition, found in the extensive Fred Spira collection. Want to make a camera? Read on.

HOW TO MAKE  A CAMERA.

THE "NORTHERN" CAMERA IN PARTS.

The following concise instructions have been written by a thoroughly practical man who has devoted many years exclusively to the study and practice of photographic cabinet work of the best class. Nothing is advised but has been tried and proved by the writer, and no method or process is described but what long experience has shown to be effectual in producing the result aimed at.

It must be obvious to every one, after a moment's reflection, that to instruct an amateur unacquainted with the use of edged tools, or whose knowledge of them is, at best, but meagre, to produce from the raw material such a piece of mechanism as a photographic camera which shall be presentable to the eye, and, what is of greater importance, of real service for the purpose intended, is neither a light nor an easy task, for the necessary technical details involved in the various processes, as setting out and permanently fixing together each separate part by such means as dovetailing, keying, clamping, tongueing, &c., &c., are so many and so various that while they may appear sufficiently explicit to the practised eye, the average amateur will undoubtedly prefer some readier means to attain his object.

Matters are consequently simplified in a marvellous manner, when all the parts comprising a camera, &c., can be obtained from a reliable firm, at a moderate price, with all the initiatory and machine processes, as tongueing, rebating, ploughing, beading, &c., already done by special machinery laid down expressly for such purposes and no other.

It becomes then, a comparatively easy task to teach the merest tyro how he may, with the aid of a few simple tools, put together and finish a really good article, that is, a camera which has been specially designed to fulfil every reasonable requirement, such as lightness, strength, and durability, combined with the utmost simplicity of construction, consistent with obtaining every necessary movement, *i.e.*, reversing back with both vertical and horizontal swing, forward movement of the back for use with wide-angle lens, horizontal and vertical movement of the front and double extension of the base.

To facilitate reference, every part will be appropriately illustrated and named; this, it must be conceded, is of immense advantage, and will doubtless be duly appreciated by anyone who has never tried his 'prentice hand at anything of the kind before.

Having then proceeded thus far, by way of introduction we will now give a list of the various requisite tools for performing the task in hand, and here let us say, that nothing but what is absolutely necessary is included, as we wish it to be distinctly understood that this is written especially for amateurs and others who are possessed of but few tools.

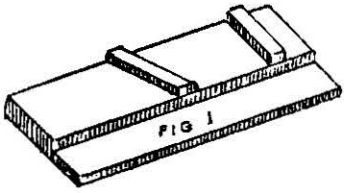
Man has been called a "tool using animal," and there are probably few amateur wood-workers who do not already possess the following well-known and simple appliances.

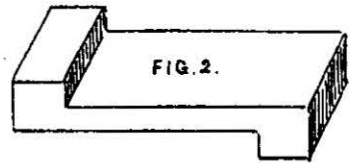
Hammer	Scraper	6 in. Square
Two Screwdrivers	Two Files (round and flat)	Brace and Bits
Smoothing Plane	Three Chisels ($\frac{1}{8}$ in., $\frac{3}{8}$ in. and 1 in.)	12 in. Rule
Rebate Plane	$\frac{1}{2}$ inch Gouge	Mallet.
Marking Gauge	Two or Three Prickers or Bradawls	

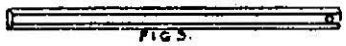
These, in addition to a workbench fitted with vice or screw attachment, are all the tools necessary for the completion of the camera and slide as supplied in parts by

THE SUN CAMERA CO. LIMITED, LEEDS.

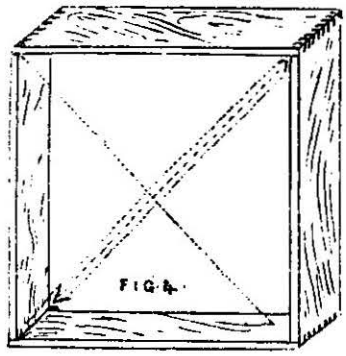
A shooting board (FIG. 1) on which both square and mitre shooting can be done, and various other handy appliances such as a bench hook (FIG. 2) or a straight-edge (FIG. 3) may be home-made as required. Our example and figures will refer to a half-plate camera and slide, this being the most popular size for the amateur, but our intelligent reader will have no difficulty in applying the directions to any other size he may desire to make up.







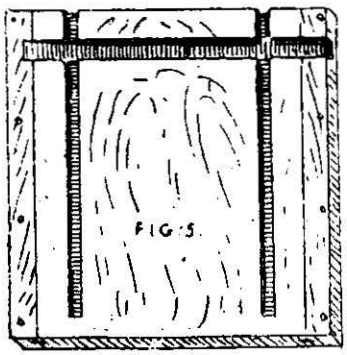
THE CAMERA.



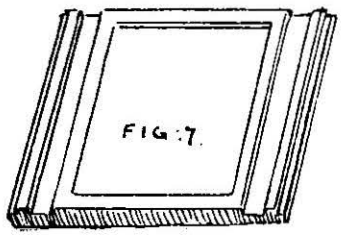
Having now got all in readiness, first glue up the body part (FIG. 4) square and free from twist. It is of the utmost importance that this be made perfectly square *inside* in order that the reversing back may fit properly in the two positions that it has at various times to occupy.

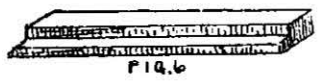
The best and simplest way to ensure this is to test the distance from corner to corner diagonally with a thin pointed strip of wood, about $10\frac{5}{8}$ in. long, as shown by the dotted lines in FIG. 4.

This must be done directly after putting together and while the glue is soft, any discrepancy that is found can be then rectified by a steady pressure with the hands pressing together the two longest corners. When this is satisfactorily accomplished put it aside, and while it is drying take up the baseboard (FIG. 5) and, after inserting the circular nut (No. 18) belonging to the camera or tripod screw (No. 16), by recessing it with the brace and bit on the inner or grooved side proceed to fit the side strips (FIG. 6).



First see that the extending frame (FIG. 7) is parallel in width from end to end, and that the tongues properly fit the rebates on the side strips, then mark the position of the latter on the baseboard, making the extending frame to fit fairly tight between them. Then bore four screw holes through each side clamp of the baseboard from the outer side at such a distance from the edges that the screws will pierce the centre of the width of the side strips, letting the end holes be $\frac{1}{2}$ in. from the top and bottom edges and the other two at equal distances between.

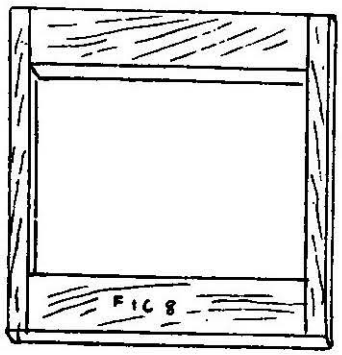




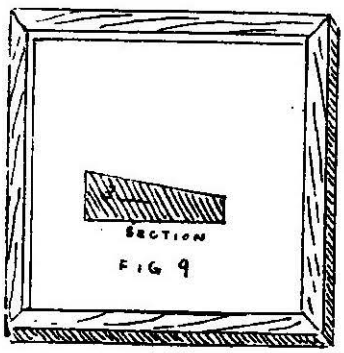
Then glue and screw down, using $\frac{1}{2}$ in. No. 4 brass screws, turning the nicks of the screws in one direction to enhance the appearance when finished. File the screw heads level with the wood and plane the side strips and extending frame level.

Now take the reversing frame (FIG. 8) and plane perfectly flat and free from twist or winding. Gauge round the edges to $\frac{3}{16}$ in. thick, and plane the other side down to the gauge lines. Care must be exercised in

doing this as it is important that its thickness be exactly equal all round, in order that it may fit equally well in both positions. The straight-edge can here be used with advantage as a test for straightness and flatness for this and all other parts requiring this exactness.

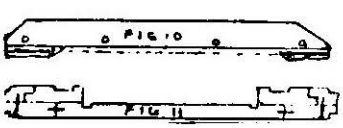


After planing up the bellows frame (FIG. 9) on the top or flat side, and paring the corners clean on the other side, take up the body part again, plane the edges of one side straight and flat, and with the marking gauge run a line 1½ in. from these true edges all round the body and plane down to the lines.



Insert the bellows frame in its position, fitting very tightly, and on the top of this place the reversing frame, this fitting easily in both positions but without shake, the outer edges of the reversing frame being flush with the edges of the body. Now remove the reversing frame and without disturbing the bellows frame mark with a pencil its position both back and front. Take out the bellows frame and with hot thick glue and a small stiff brush glue between the lines on the body only and insert the bellows frame in its place as quickly as possible, noticing that the bevelled side is inwards or away from the reversing back. Now put the reversing frame on the top and tap down with a hammer all round until it is a shade below the level of the body part, put in two fine half-inch screws through each side of the body into the bellows frame to render it doubly secure, file down the heads and plane up the body part, smooth off with scraper but do not sandpaper till later.

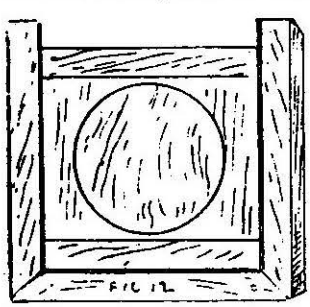
Next take out the reversing frame and attach the slide rails (FIG. 10) to it, using rather thin glue, and screwing on with four half-inch No. 3 screws to each rail, leaving 6⅛ in. space between the rebates, which will be found to be the total width of the dark slide, inclusive of the tongues, as well as allowing space for the ground glass frame of focussing screen (FIG. 13) which may herewith be dismissed as simply requiring to be planed on the edges to the width of the reversing frame and glass-papered off.



Now place the body in position on the baseboard, clamp both together in the bench screw and plane down the edges of the baseboard level with the body part, sawing off any projections of the slide rails, and while in this position smooth both together with glass-paper, slightly rounding off the edges and corners.

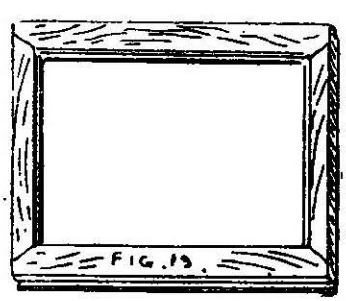
The bottom edge of the body part must be well rounded off so that it will allow of vertical swing when hinged to the baseboard. The baseboard must now be rebated on the edges of both sides to the section shown in FIG. 11 to fit the sliding hinge plates (No. 368). Mark the width of the rebates with the gauge, cutting in as deeply as possible, start the rebate with the chisel and finish with the rebate plane.

Two plug nuts (No. 28) must be inserted in the middle of the rebated edge to receive the milled screw that attaches the hinge plates. The position of these nuts will be found to be ⅞ in. from the hinged ends of the baseboard, and two more at 4 in. distance from these, measuring from centres of the nuts.



Two more nuts will also be required on the body part, one on each side, to clamp the side struts (No. 87).

After planing up the front (FIG. 12) and fitting the focus screen (FIG. 13), planing level with the slide rails, the whole may be finally scraped and smoothed off with glass-paper and put aside for polishing, all nuts and screws having been filed flush and all sharp edges and burr on the inside being previously attended to.



THE DARK SLIDE OR DOUBLE BACK.

It should not be a difficult matter to make a slide or double back from the parts as supplied by the SUN CAMERA CO. LIMITED. The grooving (FIGS. 14 or 15) forming the framework of the slide being of one uniform thickness and of the same register as the focus screen supplied with the camera, ensures the ground glass and the sensitive plate occupying the same plane of focus. The grooving is already mitred to the required lengths, and with the exception of a shaving or two being taken off with the shooting plane to make the mitres smooth and of precisely exact lengths, are all ready for glueing up. The shutters (FIG. 16) are sent out clamped, jointed, levelled on the under side, rebated round the edges, and hinged with cloth.

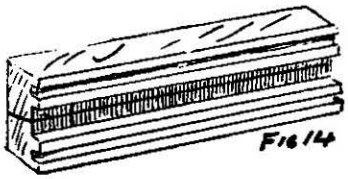


FIG 14

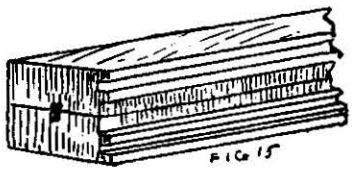


FIG 15

FIG 16

This being so, it is at once apparent that a very little labour with the rebate plane is all that is needed to fit them, after which they must be made level with the framework and the finger-pieces fitted and shaped.

The principal part in the making of the slide consists of putting the framework together strong, square, and free from twist.

It is possible to make the halves of the frame separately and to fit them together afterwards, but to do this properly requires extreme care and accuracy, and as this article is intended for the instruction of amateurs, this method cannot be recommended, but as the result of practical experience the way suggested as preferable to all others is to make and joint both halves of the frame together as if solid, but at this juncture it is advisable to point out the greatest difficulty that will be encountered, viz., that of jointing the frame in such a manner that when required the two halves will readily separate, and the manner of surmounting this difficulty which is as follows: First separate the halves of the frame or grooving and rub on a little bees'-wax or white wax on each end of their inner or grooved sides, near the mitres, but carefully preventing any getting on to the mitred ends which have to be glued together. The reason of this is to prevent any glue which might be forced through the grooving from adhering, and thus preventing the halves separating. Now put the halves of the grooving together in position and squeeze tightly in the bench screw with the inner or grooved edges downwards, and on the outer or plane edge glue a strip of strong brown paper—using rather thick glue so as to prevent it soaking into the joint. All the four sides are to be thus treated, a few minutes being allowed between each before removing. After an hour's interval the glue will be sufficiently set to allow of the mitred ends being planed smooth and square on the shooting boards. See that the measurement is correct between the mitres, viz., 6¼ in. × 4½ in., then glue up the frame in halves, *i.e.*, one side to one end. Let them stand a couple of hours, after which the remaining jointing can be done. It is advisable in gluing up these and all similar mitred ends to have the glue very hot and thin, not using any brads or clamps, but simply rubbing the mitres together as hard and as close as possible.

As soon as the glue has become hard, carefully smooth with the plane the top and bottom surfaces of the frame all round, and then in each corner of each half of the frame make a saw-kerf or cut (as in FIG. 17) and insert a key or strip of veneer, or thin wood with the grain running across the mitres. Glue these in tightly and when dry trim off the surplus and plane up the outer edges of the frame, making the sides parallel in width and measuring exactly 6⅛ in. across.

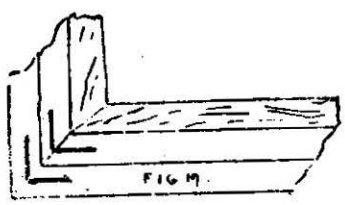


FIG 17

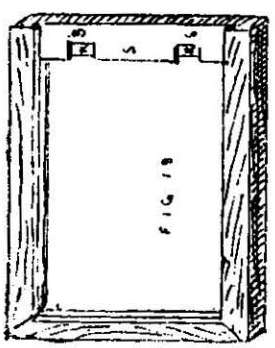


FIG 18

Now reduce the width of one end of the frame (FIG. 18) until it is ⅝ in. full, but leaving the other end the full width, merely planing off the paper. The two halves of the frame should now come apart without difficulty, but if not, proceed to remove a portion of the thickness of the top-rail, as shown

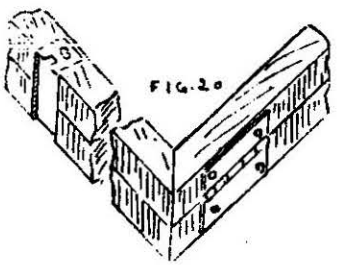
at **S S** (FIG. 18) This is to make a way for the insertion of the shutters. This must be done with the saw, chisel and file, the groove serving as a guide for the depth to be cut away. A little extra should be removed to the extent of $\frac{1}{32}$ in. to allow for the subsequent insertion of a strip of velvet.

The continuation of the shutter grooves on the part now being treated can be cut through to the top by means of a brad-awl sharpened to act as a small chisel. Two shallow recesses, **R R** (FIG. 18), must be cut to admit the shutter stops, $\frac{3}{8}$ in. wide, $\frac{3}{4}$ in. long, and $\frac{3}{4}$ in. from each side.

Next insert the shutters and plane and dress them off level with the frame, draw them out to the position they will occupy when in use in the camera, and test with the straight-edge across the bottom of the shutter and top of the frame, as it is of equal importance that the surfaces be coincident in this position as well as when the shutters are pushed home. See that the shutters fit close at the bottom and glue on the finger pieces (FIG. 19) at the top while the shutters are still in the frame. Let them fit tightly between the projecting ends of the shutters and glue both on together so that each piece will press the other in its place. When dry plane the finger-pieces down until both shutter and finger-piece combined is $\frac{5}{16}$ in. thick and the depth $\frac{5}{8}$ in. Work a small hollow with a gouge across the outside of the shutter $\frac{1}{4}$ in. from the edge and shape according to taste. Leave the finger-piece flat on the inside, as if both sides are hollowed it is unduly weakened.

If the halves of the frame have not come apart during these operations, a thin chisel may be inserted at each corner, tapping it lightly with a hammer, which will have the desired effect.

The final operations consist of putting on the hinges (No. 71) at the bottom end, $\frac{1}{8}$ in. from the corners, and the clasps or clip hinges (No. 67) $1\frac{1}{2}$ in. from the top corners. These must be let in on the knuckle side flush with the wood and $\frac{3}{16}$ in. into the frame, as at FIG. 20, so as to allow of the tongues which have yet to be worked on the edges.



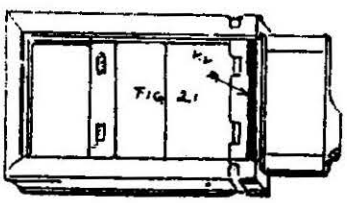
A glance at the side rails on the camera will determine the thickness of these tongues, which can be made by means of the saw, chisel, or rebate plane.

Their position should of course be first marked out with the gauge, then rough cut with the chisel, and on unclasping and laying open they can be finished off with the rebate plane.

A final clean up with the glass paper prepares the slide for the polisher.

FITTING UP THE CAMERA AND SLIDE.

When the camera and slide come from the polisher they should be stained inside with ebony stain, or dead black, and before proceeding to fit on the brass-work the following details must be attended to.



THE SLIDE.—A strip of ribbon velvet must be glued on each side of the top-rail, as shown in FIG. 21, to prevent any light passing between the shutter and the frame. All the tongues must be made to work freely but not loosely in their respective grooves. This is done by scraping off any excess of polish there may be and sprinkling on a little powdered talc. The stops must be placed on each shutter to prevent its complete withdrawal from the slide, as shown at FIG. 21. These consist of small bits of wood about $\frac{1}{16}$ in thick, and of a relative size to the recesses made to receive them. They are glued in position after the shutter is inserted.

The ivory numbers are recessed and glued into the side rail so as to be on the top when the slide is in position in the camera. Two turnpins (No. 159) are screwed into top-rail to keep down the shutters, and the slide is now finished. A notch is subsequently made on each edge to receive the corner of the turnbutton attached to the reversing back, and which acts as a stop to hold the slide in position when the shutter is being withdrawn.

THE CAMERA.—A strip of ribbon velvet $\frac{1}{2}$ in. wide must be glued on the reversing back under the focus screen frame to make it light tight when the slide is being used. Next attach the rising front to the front end of the bellows, observing the following directions in so doing.

Remove all polish and greasy finger marks there may be on the wood and slightly roughen the surface of both wood and leather with the point of a file or other implement, so that the glue may obtain greater hold. Now take a pair of sharp scissors and cut down each of the four corner creases nearly, but not quite, to the fold, and cut away the small triangular pieces from under each corner so as to reduce its thickness and ensure more perfect contact with the wood.

Damp the end fold inside with a sponge dipped in hot water and glue with hot thick glue, spread on the leather only. Place in position as quickly as possible, press well down, rubbing with the fingers round the edges both inside and out for two or three minutes, and weigh down with a heavy book or block of wood. Afterwards attach the back of the bellows to the bellows' frame, observing the same directions.

ATTACHING THE BRASS-WORK.—Fix the focus screen in its frame with the four buttons (No. 149), using ¼ in. fine screws. Another method sometimes followed is to allow the double hinges to project over the top edge of the glass and attach small stop plates at the bottom edge to correspond. Now attach the focus screen frame to the body by means of the double-jointed hinges (No. 83). Screw on the slide stop (No. 127) on the left-hand corner of the bottom slide rail to prevent the slide being pushed too far, and put on the corner plates and corner hooks (No. 113) to hold in the reversing back. Screw on the turnbutton (No. 119) in the centre of the top slide rail. This answers the double purpose of holding down the focus screen frame when not in use and of acting as a stop to the slide in use to prevent it moving when the shutter is withdrawn.

Now proceed to fit up the baseboard, place the pinion (No. 1) in its groove and mark the position for the bridge bearing (No. 5). In letting this in, be careful not to cut through the baseboard, and place it so that the pinion is exactly level with the surface of the baseboard.

While in this position screw on the end plate (No. 6). Put the extending frame in its place, flush at both ends, and then screw on the racks (No. 2) thus:—Put one screw in the end of each length of rack near the pinion, then rack out the frame until the next screw-hole is exactly over the pinion, press down and screw, then rack out to the next hole until all the screws are in. Put on the bridge stop (No. 126a) over the pinion and in contact with the inner edge of the extension frame when closed. Now fit to the rebated edges of the baseboard the improved sliding hinge-plates (No. 368), and attach to the body part by means of two strong round-headed screws, as shown in FIG. 21. These hinge-plates should be fitted rather tightly, as on this depends the rigidity of the camera when opened out. Open out the camera so that the body is at right angles with the baseboard, and attach the struts to the body with the milled screws (No. 25) for which the nuts have already been inserted. Notch out with a file a small semi-circular recess in the side of the slot in each strut so that they will catch on the shank of the milled screw whenever opened out to this position. Put the clamping or extension rods (No. 98) through the holes in the front posts and screw on the guide strips (No. 94) so that they will overlap the feet of the clamping rods, screwing on the inner side of the grooves. Put a couple of small round-headed screws at the outer ends of the grooves to prevent the feet coming beyond, and also a fine screw through each foot to keep in line and at such a distance as will allow the foot to work freely under the guide strip. The stop plate (No. 145) and turnbuttons (149) for holding in the circle or lens-board in the front may as well be put in before the bellows is attached.

The front clamping bar (No. 365) is attached with round-headed screws half an inch from the top of the posts, and adjusted so that when pressed down at the slotted end it will tighten the rising front.

Close the camera and put on the catch hook (No. 115), and the handle and bridges (169).

The screws generally used for the fittings are ¼ and ⅜ in. (Nos. 2 and 3), and should be lacquered for finished brass-work. Holes should be bored with a fine brad-awl to prevent splitting the wood before forcing in the screws.

The various fittings and woodwork necessary for the completion of the camera and one double dark slide comprise brass fittings, racks and pinion, focus screen, leather bellows, handle, slide partition and the screws required for putting together and fitting up.

The woodwork is just sufficiently advanced for the amateur to finish with the usual hand tools, the operations best performed with more elaborate machinery and steam power being already done, *i.e.*:—the baseboard clamped

and ploughed for racks and pinion; the body dovetailed; the bellows frame, focus screen frame, extending frame and reversing back mitred, keyed and glued up; the front turned out for circular disc, and the slide shutters rebated and clamped and hinged.

FINISHED CAMERA.

Complete Sets of Fittings and Woodwork, unfinished.

	With unfinished brass-work.	Finished brass-work.	With finished dark slide.	Extra slides in parts.
¼ plate	25/- ...	28/6 ...	32/6 ...	4/-
½ ,, ...	35/- ...	38/6 ...	44/- ...	4/6
1/1 ,, ...	45/- ...	50/- ...	58/6 ...	56
10 × 8 plate ...	57/6 ...	67/6 ...	80/- ...	7/-
12 × 10 ,, ...	70/- ...	82/- ...	98/- ...	8/6
15 × 12 ,, ...	85/- ...	97/6 ..	117/6 ...	11/6

Fig. 1.

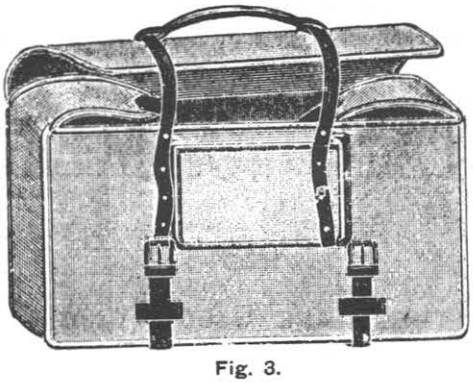


Fig. 3.

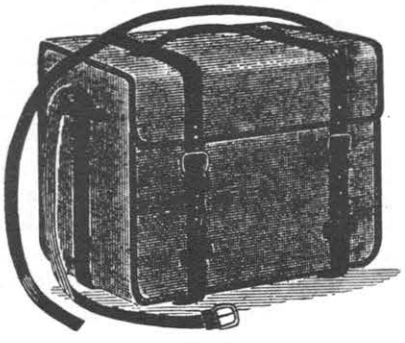


Fig. 2.

WATERPROOF CAMERA AND TRIPOD CASES.

	¼ plate.	½ plate.	¼ plate.
Fig. 1. Camera Case of dark Tweed, to carry camera and 3 slides, lens, &c. ...	3/9	4/9	6/-
,, Do. do. of tan canvas (mail cloth), the finest material procurable, with detachable shoulder strap and handle	5/-	6/6	8/6
Fig. 2. Do. do. with stiffened sides and ends, lined baize, and with partition	8/-	10/-	13/6
Fig. 3. ½ plate size Knapsack, to carry outfit inclusive of 4-fold tripod ...		13/6	
,, Do. do. with pocket to carry one dozen extra plates		14/6	

Tripod Cases, of tan canvas, 18 in. long, for 4-fold stand, 4/-; 24 in. long, for 3-fold stand, 5/-

OUR SPECIALITE LENSES.

(SPECIALLY SELECTED AND GUARANTEED ACHROMATIC.)

	Waterhouse stops.	Iris.	Aluminium with Iris.
¼ plate Rectilinear, loose hood	20/-	27/6	32/6
¼ ,, Do. do.	25/-	32/6	37/6
¼ ,, Do. do.	35/-	45/-	55/-

¼ plate RECTILINEAR for Hand Camera, 4 in., 4½ in., and 5 in. focus, with Iris, 25/-

TRADE MARKS

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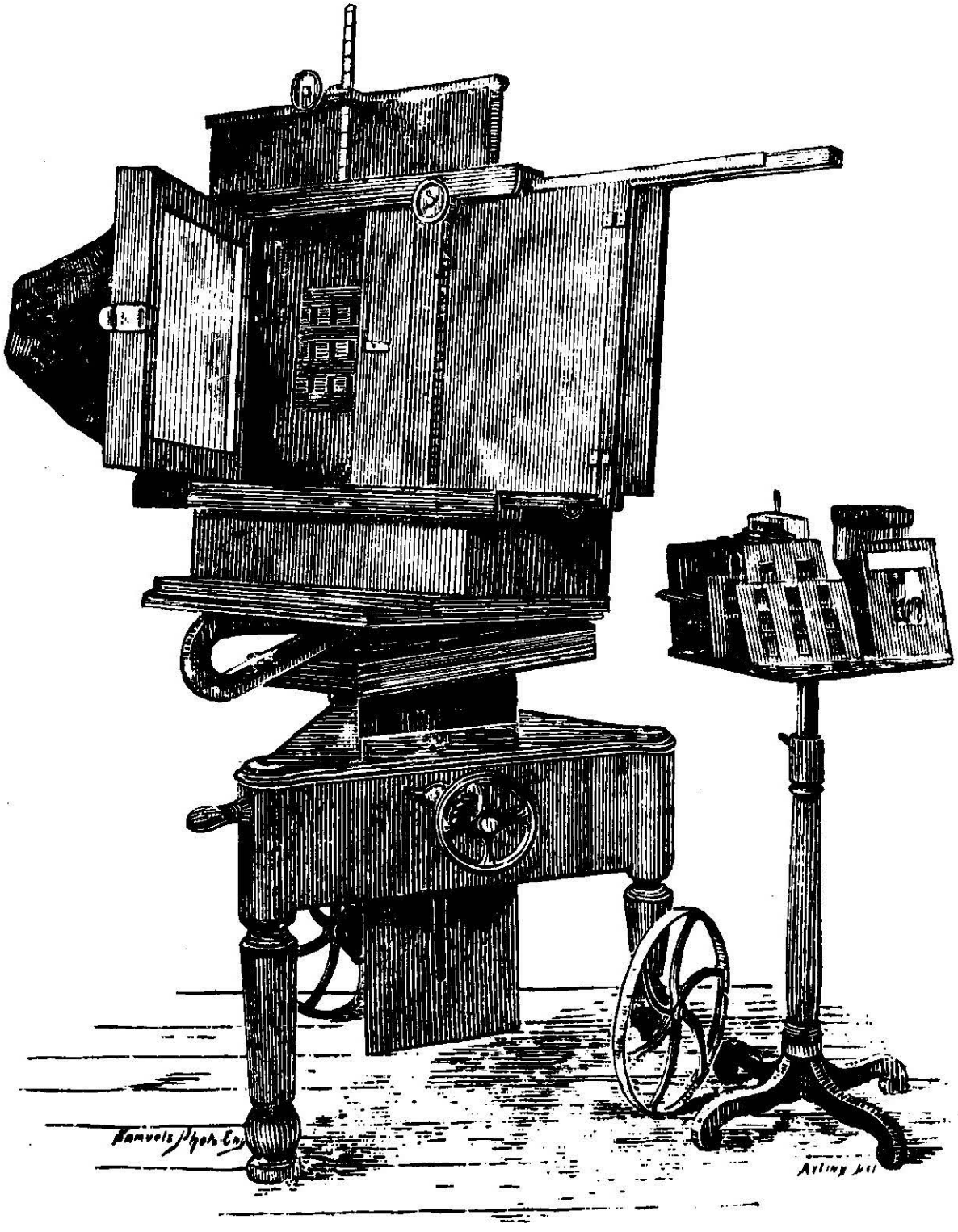
Trade-Marks	Goods
ABC	Amateur developing outfit
Acrol	Photographic developing agent
Ad-Type	Photographic paper
Aero	Photographic film, paper, lenses, filters and apparatus
Aerographic	Photographic film
Aerostigmat	Photographic lenses
Anastar	Photographic lenses
Anaston	Photographic Lenses
Aristo	Photographic paper
Athena	Photographic paper
Athenon	Photographic developing agent
Auto-Mask	Printing frames
Autopositive	Photographic film and paper
Azo	Photographic paper
Bantam	Cameras, photographic accessories, microfilmers
Bimat	Camera lenses
Brownie	Cameras, photographic accessories, safelight lamps
Cine-Kodak	Motion-picture cameras, films & accessories
Conju-Gage	Gear checker
D-11, D-76	Photographic developers & replenishers
DK-50, DK-60	Photographic developers & replenishers
Dak	Camera shutters
Dakon	Camera shutters
Dataguide	Informational and instructional guides
Dektol	Photographic developer
Dektomat	Photographic developer
Diomatic	Camera shutter
Duaflex	Cameras
Dupli-Tized	X-ray and motion-picture film
Durol	Photographic developer & replenisher
Eastko	Photographic accessories
Eastman	Chemicals and photographic products
EKC	Chemicals and photographic products
EKO	Photographic paper
Ektachrome	Color photographic film, processing kits, chemicals
Ektacolor	Color photographic film, processing kits, chemicals
Ektalite	Field lens
Ektalith	Photosensitive materials, photographic chemicals and apparatus for graphic arts
Ektalure	Photographic paper
Ektalux	Flash lighting apparatus
Ektanon	Photographic lenses
Ektar	Photographic lenses
Ektra	Cameras
Elon	Photographic developing atent
Fiesta	Cameras
Fixomat	Photographic fixer
Flexichrome	Chemicals, water colors, film, and blotting paper
Flexo	Print rollers and film clips
Fluro	Photographic lenses
Hawk-Eye	Camera
Hobbyist	Photographic enlargers
Jiffy	Cameras
K-Color	Photographic film
Kodabromide	Photographic paper and printers
Kodachrome	Color photographic film and prints, filters for color photography, viewing folder, duplicate transparencies, adapters, illuminator, film cement
Kodacolor	Color photographic film and prints, exposure guides and easel folders
Kodacopy	Duplicating apparatus and materials
Kodacraft	Photographic developing apparatus & kits
Kodafix	Photographic fixer
Kodaflat	Adhesive
Kodaflextor	Reflectors, diffusers, adapters
Kodagraph	Industrial photographic papers and chemicals, and microfilming machines, reader, projectors, enlargers, film, and endorsers
Kodaguide	Exposure charts, contrast viewing device, pocket case
Kodak	Films, cameras, photographic accessories and organic and inorganic chemicals
Kodakery	Newspaper
Kodalak	Clear lacquer
Kodaline	Photographic film and plates
Kodalite	Flash lighting apparatus
Kodalith	Films, plates, papers, developer for photo-mechanical reproduction, sensitized tracing cloth
Kodalk	Balanced alkali for use in developers and other solutions
Kodaloid	Transparent cellulose nitrate sheeting
Kodamatic	Camera shutters
Kodapak	Cellulose ester sheeting, transparent, translucent, and colored
Kodapod	Camera support
Kodascope	Motion-piction projectors and accessories, lubricating oil
Kodaslide	Projection slides, projectors, filing containers, projection accessories
Kodatape	Adhesive tape
Kodatone	Photographic prints
Kodatrace	Cellulose acetate sheeting, matte surface
Kodatron	High-speed flashlight unit and photographic film
Kodelon	Photographic developing agent
Kodet	Camera lenses
Kodex	Photographic shutters